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RHAMNUS PURSHIANA: ITS HISTORY, GROWTH, METHODS OF COLLECTION AND BIBLIOGRAPHY.

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Rhamnus Purshiana was discovered in Montana, on the banks of a tributary of the Columbia River, in 1805 or 1806, by the members of the first North American transcontinental exploring expedition under the command of Lewis and Clark ("Silva of North America," by Sargent, vol. 2, 1895, pp. 37–40). It was also found by Lewis and Clark in what is now known as Oregon and Washington. On their return journey they took with them a specimen of the shrub for identification. The exact place where Lewis and Clark collected the type, later examined by Pursh, was Camp Chopunish, situated on the east bank of the Kooskooskee (Clearwater) River, about two miles below what is now known as Kamiah, Idaho (Contributions from the National Herbarium, vol. 11, "Flora of Washington," by Piper).

This plant, along with a number of other unknown botanical specimens collected on the journey, was given to Frederick Pursh, a German botanist, of Philadelphia, for botanical study. Frederick Pursh lived in America between the years 1799 and 1812. In 1812 he went to London, where, in 1814, he published a description of the plant, giving it the name of *Rhamnus alnifolia* ("Flora Americæ Septentrionalis," vol. 1, 1814, p. 166).

Augustin Pyramus de Candolle (1778–1841) found that another plant had been named *Rhamnus alnifolia* by C. L. de Brutelle L'Heritier in 1775. In 1825 he changed the name of the plant described and named by Pursh as *Rhamnus alnifolia* to *Rhamnus Purshiana*, in honor of Pursh (de Candolle, "Prodromus Systematis Naturalis," vol. 2, 1825, p. 25).

The following is a translation of the Latin description of *Rhamnus*

alnifolia by L'Heritier, *Rhamnus alnifolia* by Pursh, and *Rhamnus Purshiana* by de Candolle, as copied in Latin by John Uri Lloyd from the original works in the Lloyd Library, Cincinnati, Ohio:

Rhamnus alnifolius (L'Heritier, "Sertulum," p. 5), erect; leaves oval, serrulate, veins straight, pointed obliquely toward the end, under surface smooth, with flowers dicœcious; peduncle one flowered, with calyx acute, fruit top shaped.

Rhamnus alnifolius (Pursh), *R. inermis* (unarmed or without thorns); leaves oval, denticulate, short acuminate; base cordate and slightly curved, veins underneath covered with hairs; peduncle split twice into two parts, berry globose but depressed. On the banks of the river Kooskooskee. Berries purple, very highly esteemed by the Indians of that country. (Pursh's "Flora Americæ Septentrionalis," vol. 1, 1814, p. 166.)

Rhamnus Purshianus (de Candolle), erect; leaves oval, denticulate, short acuminate, cordate and slightly curved, veins underneath covered with hairs, peduncle split twice into two parts, berry globose but depressed. On the banks of the river Kooskooskee. *Rhamnus alnifolius* (Pursh, "Flora," vol. 1, p. 166, not L'Heritier) ("Prodromus Systematis Naturalis Regni Vegetabilis," by de Candolle, vol. 2, 1825, p. 25).

Johann Friedrich (Iwan Iwanowitsch) Eschscholtz, a Russian naturalist, discovered the plant on the shores of San Francisco Bay, California, in 1816, and it was described by him in the "Memoirs of the Academy of St. Petersburg," vol. 10, 1826.

Prof. C. S. Sargent ("Notes on North America Trees," vol. 23; *Garden and Forest,* Feb. 18, p. 75; *The Pacific Druggist,* April 15, 1891) states that in 1838 Rafinesque describes in the "Silva Telluriana" his Personon Laurifolium, his description being drawn from a plant which he found in Bartram's Botanic Gardens, in Philadelphia. It is a tree, he says, from the Oregon mountains with elliptical, acute, sub-entire, shining, glabrous leaves pubescent on the lower surface when young, reniform petals, and slight emarginate stigma. The plant in Bartram's Gardens was twenty feet high, and the berries formed fine clusters and assumed three colors, being by turn green, red, and black when fully ripe. This is the earliest record of the cultivation of *Rhamnus Purshiana,* for there does not seem to be much doubt that it was this plant that Rafinesque had in mind. Certainly there is no other tree from the mountains of Oregon which could be made to answer to this description. If Lewis

and Clark, as is possible in the case of the plant of whose medicinal value they must have learned from the Indians, had brought home seed, these might very well have produced by 1838 trees twenty feet in height.

FIG. 1.—A Cascara tree on University of Washington campus.

Rhamnus Purshiana is claimed to have been known since the early part of the nineteenth century to the Mexicans and Spanish priests of Old California. It was known by the Spanish name of

Cascara Sagrada (sacred bark), so named because the wood was supposed to be identical with the "Shittim" or "Chittim" wood used in the building of the Ark of the Covenant.

COMMON NAMES.—In the different localities where it grew the tree was known by the Indians and early white settlers by the following names: Bearberry, Barberry, Coffee-berry, Coffee-tree, Bitter-bark, Bear-wood, Wahoo, Shittim-wood, Chittim-wood, and Cascara Sagrada.

RANGE.—*Rhamnus Purshiana* is widely distributed throughout the Northwest. It is found in small quantities at the head of the Portland canal and mouth of the Unuk River in Southeastern Alaska and in northern British Columbia, in commercial quantities on the west slope of the Cascade Mountains of southern British Columbia, Washington, Oregon, and northern California.

It grows in the Mission Mountains and near the Flat-head Lake in Montana, in the Bitter-root Mountains and Seven-Devil Mountains in Idaho. It occurs occasionally on the eastern slope of the Sierra Nevada Mountains, and then reappears in the mountains of Colorado and western Texas. In one of its forms it is scattered throughout the mountainous regions of southern California, Arizona, New Mexico, and northern Mexico.

COMMERCIAL RANGE.—The tree grows abundantly and attains its greatest size on the western slope of the Cascade range of mountains in Washington, Oregon, northern California, and southern British Columbia. Plenty of moisture and a slightly sandy soil are favorable factors for its rapid development.

It is usually found in small river bottoms, sides and bottoms of canyons, growing under the shelter of coniferous forests, around the edges of swamps, and on slightly elevated moist areas.

With favorable soil and moisture the tree frequently springs up in places formerly covered with coniferous trees that have been destroyed by fire. It is seldom found in broad river bottoms or valleys on account of being crowded out by the more thrifty and rapid-growing alder and cottonwood trees.

The tree is found at sea level and up to an altitude of 1800 to 2000 feet. Men working in the cascara forests of Washington state that the tree grows to a height of twenty to thirty feet and attains an average diameter of six to eight inches. Trees having a diameter of three feet have been found. Sargent ("Silva of North America," vol. 2, p. 37) states that the tree attains a height of thirty-five to

forty feet with a diameter of eighteen to twenty inches. In shady places the tree grows tall, straight, and slender, while in open places with plenty of sunlight it branches near the base, attains greater diameter and less height.

A mild, moist climate is necessary for the abundant growth and large size of the tree. In a dry climate and higher altitude it occurs sparingly and in shrub form only. In its most northern range, in Southeastern Alaska, it also grows as a shrub of three to six feet in height. In certain sections of the California coast it has a height of only a few inches with prostrate stems.

REFORESTING.—Opinion differs as to the natural reforesting of cut-over areas. It is stated by some that a new growth always springs up on cut-over areas, providing the bark is not removed from the stumps; while others claim that sprouts rarely spring up from stumps, because the trees are usually cut while the sap is running, hence very little life is left in the stump.

The tree is a prolific seeder; seeds are of medium high germination (often tardy) and of very persistent vitality. Scattered seedlings are fairly abundant in moist forests, litter and mucky soils; scanty in drier habitat, except in depressions where seeds have been deeply covered by accident. (Geo. B. Sudworth, U. S. Department of Agriculture, Forest Service Bulletin, " Forest Trees of Pacific Slope," 1908, p. 404.)

LONGEVITY.—The longevity has not been fully determined for large trees. Trees ten years old are from six to eight inches in diameter. Trees estimated at twenty-five to forty years old are frequently found.

CULTIVATION.—For several years the U. S. Department of Agriculture has conducted experiments looking towards the cultivation of this tree, and has succeeded in growing it from the seed in moist places near Washington, D. C., the trees in six years from the seed attaining a height of ten to twelve feet.

The Kew Gardens in England ten years ago raised cascara sagrada from the seed collected in California, and it has proved quite hardy. The tree has also been grown in Germany, but is said to develop but slowly.

In the experiments conducted by the Department of Agriculture a certain method of pruning has been followed which forces the top of the tree into three or four branches; one of these branches may be cut each year for peeling, and, as another branch soon develops in its

place, this will be ready for cutting in a few years, the other branches in the meantime having been treated in the same way.

Seed of *Rhamnus Purshiana* is not on the market, but would have to be collected by some one in the cascara region. (Alice Henkel, "The Cultivation of Medicinal Plants," *The Druggists' Circular,* March, 1912, p. 133.)

The following is a description of the bark, leaves, flowers, and nutlets of *Rhamnus Purshiana* by Sargent ("Silva of North America," vol. 2, pp. 37-40).

The bark of the trunk, even on old trees, is rarely more than a quarter of an inch thick, and varies in color from dark brown to light brown or gray tinged with red, the surface being broken into short, thin scales. The branchlets, when they first appear, are coated with fine, soft pubescence; they are pale yellow, green, or reddish-brown, and are pubescent, glabrous, or covered with scattered hairs in their second season, when they are marked with large, elevated scars left by the falling of the leaves.

The leaves are alternate, elliptical-oblong, obovate, acuminate, or broadly elliptical, and are obtuse, acute, or bluntly pointed at the apex, rounded sub-cordate, or sometimes wedge shaped at the base, and serrulate, denticulate, obscurely crenate, or often merely entire with wavy margins. They are thin membranaceous or sometimes thick and coriaceous, and are glabrous or pubescent with scattered hair on the lower surface and along the veins on the upper surface. They vary from an inch to over seven inches in length, and are conspicuously netted veined, with broad and prominent mid-ribs and primary veins; they are borne on stout, often pubescent, petioles one-half inch or an inch long, and are sometimes pale yellow-green above and below, and sometimes dark green and rather opaque above and paler and often somewhat orange color or brown on the lower surface.

In Washington and Oregon and at high elevations in the mountains the leaves fall late in November, having previously turned pale yellow. Farther south and near the California coast they remain on the branches almost all winter, or until the following spring. The stipules are membranaceous, acuminate, and nearly deciduous.

The flowers are produced on the young shoots in axillary umbellate cymes or slender, pubescent peduncles varying from one-half to nearly an inch in length. The pedicels are slender, pubescent,

a quarter of an inch to almost an inch long and four to five times longer than the calyx, which is narrowly campanulate with more or less spreading acuminate lobes. The petals are minute, ovate,

FIG. 2.—Peeling Cascara bark in Washington forests. Illustrating a method employed in commercial collection, and the dense forest in which the collector must work.

and deeply emarginate at the apex, and enfold the short stamens, whose filaments are somewhat thickened at the base. The style is crowned with a slender two-lobed stigma. The fruit globose or broadly obovoid, a third to one-half inch in diameter and very

slightly or not at all lobed, with thin, rather juicy pulp and two or three nutlets. It is at first green, then red, and finally black at maturity.

FIG. 3.—Cutting Cascara tree in Washington forests.

The nutlets are obovate, usually a third to an inch long, rounded on the back, and flattened on the inner surface by mutual pressure, with two bony, tooth-like enlargements at the base, one on each side of the large scar of the hilum, and a thin gray or pale yellow-

green shell. The testa of the seed is thin and papery, its outer surface of a yellow-brown color and its inner surface like the cotyledons, bright orange color.

CHARACTERISTICS OF THE WOOD.—The wood of *Rhamnus Purshiana* while green is soft and brittle, but when dry it is tough and hard. After the bark is removed from the wood it checks very easily on drying. It is used to some extent in making ax-handles and wagon spokes.

COLLECTION OF BARK.—The season for peeling and collection of the bark is during the months of April to September. The tree is usually cut down and the bark removed from every part except the smallest branches. Trees of four inches or less in diameter are not cut, because the bark is too thin. Foreign material, such as sand, moss, etc., is removed by scraping; the common curry comb is the convenient tool. Those who peel on a small scale usually prepare very clean bark, while those who work on a larger scale are frequently careless in removing foreign matter. Much of the bark is collected by small ranchers and Indians living in the vicinity of the cascara areas. Larger quantities are collected by companies, who employ a number of men for this purpose during the season of collection.

CURING OF THE BARK.—After being mossed the bark is spread out on the ground on tarpaulins or on racks in the sunshine to cure. Sometimes it is kept under cover during the curing period. If placed in direct sunlight it usually takes about four days for the curing process. About 60 per cent. of its weight is lost during the curing stage. If not rained upon the bark will cure with a rich satin brown color, while if rained upon it will be spotted with black or become entirely black. Slow, careful drying yields bark 10 per cent. heavier than if hastily dried. The bark when dry is broken into small pieces, usually by means of a feed chopper, then packed into sacks holding from 50 to 100 pounds and stored in a dry place. The collector of the bark seldom keeps it during the aging period of one to two years. The season's collection is, as a rule, contracted for before peeling begins, and the product is shipped early in the fall. The dried bark must be carefully kept, otherwise it will absorb moisture and deteriorate.

PRICES AND PRODUCTION.—When first introduced to commerce the bark of cascara sagrada commanded a price of fifty to sixty cents per pound. The supply, however, rapidly increased and prices fell

during the next few years. The following table presents data on prices and annual production of the bark for the last decade, as compiled from the files of the *Oil, Paint and Drug Reporter* by Rodney H. True (*The Pharmaceutical Era,* January, 1913, p. 9):

Year.	Highest price per pound.	Lowest price per pound.	Estimated quantity of bark peeled.
1901	5.5 cents	4.5 cents	500–600 tons.
1902	6.0 cents	4.75 cents	450 tons.
1903	22.5 cents	10.0 cents	1000 tons.
1904	17.00 cents	7.0 cents	750–1500 tons.
1905	7.0 cents	5.5 cents	850 tons.
1906	11.0 cents	5.5 cents	200 tons.
1907	10.5 cents	8.5 cents	250–600 tons.
1908	9.5 cents	6.5 cents	
1909	8.5 cents	7.0 cents	
1910	7.5 cents	7.0 cents	550–600 tons.
1911	9.0 cents	7.5 cents	1000–2000 tons.
1912	10.5 cents	8.0 cents	500 tons.

Stewart & Holmes Drug Company, of Seattle, Wash., states that the average price of the bark on the Pacific coast for 1913 was 5 cents per pound, and the yield was estimated at 1200 to 1500 tons. It is estimated that about 50 per cent. of the annual yield is exported to Europe, the remainder being shipped to eastern drug manufacturers of the United States.

Future Supply.—Cascara dealers have been predicting for more than a quarter of a century that the supply would soon be exhausted, but each year the yield is sufficient to meet the demand. The greater portion of the easily accessible trees have been cut, therefore the collectors must find new fields, which are naturally more remote from transportation.

Collectors usually leave standing trees under four inches in diameter, because of the thin bark, which insures reproduction on cut-over areas. The vast holdings of large timber companies contain thousands of tons of cascara, but they will not permit the peeling of these trees. This fact, together with the fact that new trees are growing on tracts that have been peeled once or twice before, insures a supply of bark for many years.

Description of the Cured Bark.—It is usually in flattened or transversely curved pieces, occasionally in quills two to ten centimetres long, and three centimetres in diameter, bark one to three millimetres thick; outer surface dark brown or brownish red, frequently completely covered with grayish or whitish lichens, several of

which are peculiar to this bark, and with small groups of brownish apothecia, longitudinally striate, turning red when moistened with solutions of the alkalies; fracture short, with projections of bast fibres in the inner bark, the medullary rays one or two cells wide, forming converging groups; in cross section this inner surface of the bark indistinctly crenate; odor distinct; taste bitter, slightly acrid. (Dr. Henry Kraemer, "Botany and Pharmacognosy," 3rd Edition, p. 524.)

FIG. 4.—Packing Cascara bark to trail. Because of the underbrush and fallen timber horses cannot be used except on trails.

DESCRIPTION OF THE POWDERED BARK.—The powdered bark is light brown; bast fibres long, much thickened, lignified; stone cells very thick-walled, about 50 μ in diameter, crystal fibres containing monoclinic crystals of calcium oxalate; calcium oxalate also in rosette aggregates or monoclinic prisms 5 to 20 μ in diameter; starch grains spherical, about 4 μ in diameter; parenchymatous cells with yellowish contents colored red with alkalies. (Dr. Henry Kraemer, "Botany and Pharmacognosy," 3rd Edition, p. 759.)

STRUCTURE OF THE BARK.—The bark as described by Prescott consists of three parts; namely, the corky layer, the middle bark, and the inner bark.

The corky layer consists of an outer epidermis of dark brown weathered cells, then several rows of cells filled with a dark red coloring matter, and in the more recent bark a row or two of cells containing chlorophyll.

The middle bark is made up of parenchymatous cells, which are filled with small starch grains. There are visible, also, in the transverse section, several groups of cubical crystals and in the longitudinal section groups of very thick-walled yellow cells.

The inner bark consists principally of yellow medullary rays,

FIG. 5.—Transporting Cascara bark on pack horses to wagon road.

separated by bast parenchyma, through which are scattered numerous yellow bast fibres. As seen in the longitudinal section, these fibres are frequently surrounded by small cubical crystals. (Parke, Davis and Company, "New Preparations," Feb. 5, 1879; "Proc. of Amer. Pharm. Assoc.," vol. 27, 1879, p. 262.)

MICROSCOPICAL EXAMINATION OF THE BARK.—The corky layer is about 0.045 mm. thick, and consists of eight or twelve rows, somewhat flattened, rather thick-walled, but not sclerotic cells. The parenchyma of the primary bark is tangentially elongated, partly of a collenchymatic character, free from secondary cork, and contains

scattered groups of roundish stone cells, with very thick walls, and accompanied by single rhombohedric crystals; the thin-walled parenchyma contains numerous groups of crystals. The inner bark consists of medullary rays composed of two or three rows of thin-walled, somewhat radially elongated cells, and of broader bast rays in which the parenchyma cells are coarsely dotted upon the radial and horizontal walls, and loosely united in a tangential direction; the sieve-tubes are larger, irregularly angular, and united, to the number of four or six, by means of coarsely porous sieve-plates, and on the radial sides marked with roundish sieve fields; the bast fibres form alternate groups of two or three rows, extending into few bast rays, and are surrounded by crystal cells. (Dr. J. Moeller, *Pharm. Centralhalle,* No. 28, 1882; "Proc. A. Ph. A.," vol. 31, 1883, p. 166.)

HISTORY OF RHAMNUS PURSHIANA IN THE MEDICAL PROFESSION. —J. Winchell Forbes (*Practical Druggist,* Aug., 1910, p. 48) states that cascara bark was brought to the notice of the public in 1872 by a man named Donnelly, who learned of its virtues from the Catholic priests and Indians of Oregon and northern California. The priests called the tree "shittim wood," claiming that it was identical with that used in making the Holy Ark, and for this reason the bark was called cascara sagrada (sacred bark).

Under the direction of Mr. Forbes, Donnelly made a preparation of the bark by macerating it in cider vinegar for two weeks. This preparation was sold as a patent medicine under the name of "Donnelly's Discovery," which appears to have been the earliest commercial use of the bark.

In a paper contributed to "New Preparations" (Parke, Davis and Company, Oct. 15, 1877, p. 8), Dr. J. H. Bundy, an eclectic physician of Colusa, Cal., commended cascara sagrada as a valuable remedy in the treatment of constipation. In January, 1878, Dr. Bundy contributed a paper on the subject of cascara sagrada in which he gave the uses of its fluidextract.

To Dr. J. H. Bundy, 1877, is due the credit of introducing the bark of *Rhamnus Purshiana* (cascara sagrada) to the medical profession. In 1877 he shipped a quantity of the bark to Parke, Davis and Company, of Detroit, Mich., who in 1878 made the first pharmaceutical preparation (the fluidextract). To Parke, Davis and Company is therefore due the credit of bringing a preparation of this drug to the attention of physicians and pharmacists. Parke, Davis and Company were for a number of years the sole manufacturers of

preparations of this drug. ("Proc. of the Amer. Pharm. Assoc.," vol. 44, 1896, p. 198; *Practical Druggist,* August, 1910, p. 48; Bulletin of the Lloyd Library, No. 18, 1911, pp. 68, 69.)

Parke, Davis and Company state in one of their publications that they brought cascara sagrada to the notice of the British Medical Association at Cork in 1879.

Dr. C. H. Adair, of Colusa, Cal., a partner of Dr. Bundy, sent, in 1878, specimens of the bark and botanical specimens of the tree yielding it to J. U. Lloyd, of Cincinnati, Ohio. These, on identification by Curtis G. Lloyd, proved to be *Rhamnus Purshiana,* thus establishing the drug's botanical position. ("Proc. of the Amer. Pharm. Assoc.," vol. 44, 1896, p. 198; Bulletin of the Lloyd Library, No. 18, 1911, p. 70.)

In 1880 George W. Kennedy first published a formula for an elixir of *Rhamnus Purshiana.* ("Proc. of the Amer. Pharm. Assoc.," vol. 28, 1880, p. 431.)

Prof. W. T. Wenzell, in 1883, published a formula for an elixir of cascara sagrada, using potassium carbonate to remove the bitter principle. ("Proc. of the Cal. Pharm. Soc.," 1883; AMER. JOUR. OF PHARM., May, 1883, p. 252; "Proc. of the Amer. Pharm. Assoc.," vol. 31, 1883, p. 82.)

Mr. James G. Munson, a druggist of San José, Cal., in a letter to the writers under date of January 24, 1914, claims to have been the first to discover how to make tasteless fluidextract of cascara sagrada by the magnesium oxide process. This was in the fall of 1886, while he was in the employ of Prof. W. M. Searby, of San Francisco, Cal. Mr. Munson, however, did not publish a formula for the preparation, and the method remained a trade secret. (*The Pacific Druggist,* June 15, 1890, p. 27.)

Dr. Fred A. Grazer, of Sacramento County Hospital, Sacramento, Cal., in a letter to the writers under date of November 21, 1913, states that Prof. W. M. Searby, of San Francisco, Cal., was the first to introduce a preparation of bitterless fluidextract of cascara sagrada which was offered for sale by retail druggists. The method of manufacture was a secret process, no formula being published. Dr. Grazer published the first formula for the preparation of a bitterless fluidextract of cascara sagrada, using calcined magnesia to remove the bitter principle. (*Pharmaceutische Rundschau,* Jan., 1888, p. 9; "Proc. of the Amer. Pharm. Assoc.," vol. 36, 1888, p. 253.)

Parke, Davis and Company, of Detroit, Mich., in their pamphlet

on "Cascara Sagrada and its Preparation," state that they have a formula (No. 536), under date of 1887, for the manufacture of aromatic (tasteless) fluid cascara sagrada.

R. Wright published, in 1888, a formula for a bitterless fluid-extract of cascara sagrada, using calcined magnesia to remove the bitter principle. ("Yearbook of Pharmacy," 1888, pp. 395, 396; "Proc. of the Amer. Pharm. Assoc.," vol. 37, 1889, p. 381.)

Professor John M. Maisch ("Proc. of the Amer. Pharm. Assoc.," vol. 38, 1890, p. 394) calls attention to the fact that H. R. Slack, Jr.,

FIG. 6.—Sun-drying Cascara bark on platform of abandoned saw-mill.

recently recommended *Rhamnus Purshiana* for pharmacopœial recognition before the Georgia Pharmaceutical Association.

The bark first became official in the United States Pharmacopœia in the 1890 edition.

HISTORY OF THE CHEMISTRY OF RHAMNUS PURSHIANA.—The first chemical examination of the bark was made by Dr. A. B. Prescott, who isolated a brown resin of strong, bitter taste, colored vivid purple-red by potassium hydroxide solution; a red resin, nearly tasteless, colored rich brown by potassium hydroxide solution; a yellow resin or a neutral body, tasteless, colored bright red-brown by sulphuric acid, not colored by potassium hydroxide solution. He also

isolated a crystallizable body in white double pyramids, and some other form of dimetric system. Tannic acid, oxalic acid, malic acid, a fixed oil, a volatile oil, wax, and starch were also found. (AMER. JOUR. OF PHARM., vol. 51, 1879, p. 165.)

Limousin (*Jour. de Pharm. et de Chim.* (5), vol. 6, 1885, p. 80; "Proc. of the Amer. Pharm. Assoc.," vol. 33, 1885, p. 188) considered that the resins obtained by Prescott were derived from chrysophanic acid, which he believed to be present in notable quantities. According to H. A. D. Jowett ("Proc. of the Amer. Pharm. Assoc.," vol. 52, 1904, p. 288) these deductions are incorrect. He believes that emodin, which he claims is present, will give the characteristic reactions thought to be due to chrysophanic acid.

FIG. 7.—A means of moving dried Cascara bark to bark cutter.

W. T. Wenzell (*Pharm. Runds.*, vol. 4, 1886, p. 79) isolated from the bark a small quantity of an orange-red, crystalline substance, melting at 226°–230° C., and having the properties of a glucoside. Later investigators have shown that it was impure emodin.

H. F. Meier and J. L. Webber (AMER. JOUR. OF PHARM., vol. 60, 1888, p. 87) found, as a result of their investigation, a glucoside, a ferment, glucose, and traces of ammonia.

Paul Schwabe (*Archiv. der Pharm.*, vol. 226, 1888, p. 569) examined *Rhamnus Purshiana* and found emodin, identical with that of *Rhamnus frangula,* to exist as such in the bark, and identified it by means of its acetyl and di-bromo compounds, all of which were

analyzed. He considered that Wenzell's crystals, previously referred to, were merely impure emodin, and could obtain no evidence of the existence of a glucoside, nor could he isolate any other crystalline substance.

Dr. Eccles reports in the *Druggists' Circular* of March, 1888, p. 54, the discovery of the presence of an alkaloid which he states he has separated from the fluidextract and precipitated by Mayer's reagent.

A. C. Zeig (" Proc. of the Amer. Pharm. Assoc.," vol. 37, 1889, p. 261) further examined the resins previously described by Prescott, but was unable to isolate any definite principle.

Le Prince (*Compt. rend.*, vol. 115, 1892, p. 286) claims to have obtained the active principle of cascara bark in a crystalline form and named it cascarine. Le Prince suggested that cascarine might be identical with rhamnetin.

A most curious confusion has arisen in chemical literature with respect to this substance. Beilstein (" Handbuch," 3rd edition, vol. 3, p. 627), under cascarine, states that it is identical with rhamnetin, but Phipson (*Compt. rend.*, vol. 115, 1892, 474) considers that it was identical with xantho-rhamnin, and Van Rijn (" Die Glykoside," 1900 edition, p. 299), without comment, accepts this latter statement, and under xantho-rhamnin gives the details of Le Prince's preparation of cascarine from cascara.

The properties of cascarine, as given by Le Prince, prove that it could not be identical with either rhamnetin or xantho-rhamnin. Le Prince presents no evidence of the purity of cascarine; it agrees, however, in properties, with the exception of the melting-point, with emodin.

E. Cabanes states that the active principles of cascara bark are located in the layers of bast immediately adjoining the cambium, and in the medullary rays traversing these layers. (*Pharm. Jour.*, May 2, 1896, p. 343; *Rep. de Pharm.* (3), vol. 7, p. 97; " Proc. of the Amer. Pharm. Assoc.," vol. 44, 1896, p. 638.)

A. R. L. Dohme and H. Englehardt (" Proc. of the Amer. Pharm. Assoc.," vol. 45, 1897, p. 193) examined *Rhamnus Purshiana* and claimed to have isolated the active principle of the drug, which they named Purshianin. This was stated to be a glucoside, yielding, on hydrolysis, emodin and a sugar which was not identified. They consider the fat to be a mixture of dodecyl palmitate and stearate. They also attempted to obtain the bitter principle in a crystalline form, but were unsuccessful.

H. A. D. Jowett ("Proc. of the Amer. Pharm. Assoc.," vol. 52, 1904, p. 295) summarizes the results of previous investigators as follows:

1. The only definite principle isolated from cascara bark, the identity of which can be considered to be absolutely established, is emodin.

2. The statement of the existence in the bark of chrysophanic acid, chrysarobin, or glucosides yielding on hydrolysis emodin, chrysophanic acid, or rhamnetin, is not supported by satisfactory experimental evidence.

FIG. 8.—Cutting and sacking dried Cascara bark.

3. Wenzell's "crystals," Le Prince's "Cascarine," and Dohme and Engelhardt's "Purshianin" would appear, from the descriptions given by the respective authors, to be merely impure emodin.

4. No indication can be given of the identity of the crystals described by Prescott.

5. It has been stated by Dohme and Engelhardt that the fat of cascara consists of dodecyl palmitate and stearate.

Mr. Jowett ("Proc. Amer. Pharm. Assoc.," vol. 52, 1904, pp. 288–295), in his investigations, confirmed the presence of emodin in cascara, and also isolated a substance which he called isoemodin. He also found glucose and syringic acid. No evidence was obtained of the existence of chrysophanic acid, chrysarobin, or glucosides yielding on hydrolysis emodin, chrysophanic acid, or rhamnetin.

No substance corresponding to either cascarine or purshianin was found. The fat was found to consist of rhamnol arachidate and free arachidic acid. A hydrolytic enzyme was isolated. The bitter and the active principles of the bark were not isolated.

CHEMICAL CONSTITUENTS.—The chemical constituents of *Rhamnus Purshiana* are being studied by the writers, and the results of the investigation will appear in a later issue of this journal.

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UNIVERSITY OF WASHINGTON, College of Pharmacy,
Seattle, Washington, June 17, 1914.

THE INSECTICIDAL VALUE OF FLUIDEXTRACT OF LARKSPUR SEED.*

By J. B. Williams.

An examination of several samples of fluidextract of larkspur seed on the market at the present time showed a very marked difference in their physical, chemical, and insecticidal properties. The samples examined varied in color from a dark brown to a very light yellow; the alcoholic content from 40 per cent. to 80 per cent., the fixed oil content from less than 0.2 per cent. to nearly 20 per cent., the alkaloidal strength from 0.43 per cent. to over 1 per cent., while the insecticidal value varied 500 per cent. (1 to 5).

With the object in view of determining if possible the constituent of larkspur seed to which it owes its insecticidal properties, and the best means of extracting the same, a number of fluidextracts were prepared, using various menstrua. The resulting fluidextracts were assayed for alkaloidal content and also for fixed oil, and their insecticidal value was determined by tests on living insects (bedbugs). The seed used was that of *Delphinium ajacis*, L., and was ground to a No. 30 powder. The methods of extraction were as follows:

No. 1.—Extracted by percolation with 95 per cent. alcohol, the strong percolate reserved and extraction continued until the drug was practically exhausted; the weak percolate evaporated to a soft extract and dissolved in the reserved portion, and sufficient 95 per cent. alcohol added to make 1 c.c. for each gramme of drug used. Upon standing this fluid separated into two well-defined layers, the upper oily layer equalling about 45 per cent. and the lower layer about 55 per cent. of the whole. These were separated and each made up to the original volume with 95 per cent. alcohol and, for purposes of identification, marked 1–A for the upper and 1–B for the lower layer.

No. 2.—Extracted by percolation in usual manner with dilute alcohol.

No. 3.—Extracted with 30 per cent. alcohol.

No. 4.—Extracted with petroleum benzine, the benzine removed

* Presented at the meeting of the American Chemical Society at Rochester, N. Y., September, 1913.

by evaporation on the water-bath and the residue dissolved in 95 per cent. alcohol.

No. 5.—Extracted with petroleum benzine, the benzine solution shaken out with dilute acid to remove the greater part of the alkaloid, then evaporated and the residue dissolved in 95 per cent. alcohol.

No. 6.—Extracted with 10 per cent acetic acid, the acid removed by distillation and the residue dissolved in dilute alcohol.

No. 7.—The drug residue from No. 6 extracted with 95 per cent. alcohol.

No. 8.—Extracted with 95 per cent. alcohol until a yield of 1 c.c. for each gramme of drug used was obtained. This gave a perfectly clear fluid, showing no signs of separating after standing several weeks.

No. 9.—The extraction of drug residue of No. 8 continued until a further yield of 1 c.c. for each gramme of drug used was obtained.

No. 10.—The alkaloidal residues of several assays dissolved in sufficient 95 per cent. alcohol to make a 1 per cent. solution.

These fluidextracts varied in color from a dark brown (No. 6) to a very light yellow, and after standing several weeks, with the exception of Nos. 2, 3, and 6, which show some sediment, are in good condition.

The alkaloid and fixed oil contents are as follows:

		Color	Alkaloid	Oil
1	1–A	Pale yellow	0.26	21.34
	1–B	Yellow	0.81	7.08
2		Dark brown	1.42	0.19
3		Dark brown	1.26	0.12
4		Pale yellow	0.17	30.37
5		Pale yellow	0.06	30.54
6		Very dark brown	1.24	0.14
7		Yellow	0.06	23.67
8		Yellow	0.60	24.76
9		Pale yellow	0.11	3.60
10		Reddish yellow	1.0 (not assayed)	

The drug itself assayed 1.78 per cent. alkaloids and 36.1 per cent. oil.

The insecticidal values of the fluids were determined by Mr. H. C. Hamilton by the method of Houghton & Hamilton.* The results were as follows:

* Eleventh Report of the Michigan Academy of Science, 1909.

	Effective dilution	Coefficient.
1 { 1-A	1-120	6.0
1 { 1-B	1-50	2.5
2	1-18	0.9
3	1-12	0.6
4	1-120	6.0
5	1-150	7.5
6	1-18	0.9
7	1-120	6.0
8	1-100	5.0
9	1-15	0.75
10	1-12	0.6
11 standard	1-20	1.0

From the above results it would appear that it is the oil and not the alkaloid to which larkspur seed owes its insecticidal properties, and, since the fluid is seldom used internally but almost exclusively as an insecticide, it would seem that the menstruum that will extract the largest amount of oil is the proper one to use. It should be noted, however, that the alkaloid has a slight insecticidal value, as the sample containing 1 per cent. of alkaloid and no oil was one-tenth as active as the samples containing a high content of oil.

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PROGRESS IN PHARMACY.

A Quarterly Review of Some of the More Interesting Literature Relating to Pharmacy and Materia Medica.

By M. I. Wilbert, Washington, D. C.

The European war has precipitated a condition unprecedented and unparalleled in the history of the drug trade of this country, and has demonstrated as no other line of argument possibly could that we in America are still largely dependent on European countries for our supplies of drugs and chemicals. More than 50 per cent. of the drugs and chemicals used in pharmacy and allied industries has been subjected to marked advances in price. The available stocks of many articles of a staple nature appear to have been at a rather low level, and some of the chemicals of German origin are already practically exhausted.

It will no doubt be months before the drug market can adjust

itself to the suddenly changed conditions, and the ultimate solution of the problems that are now presented will be eagerly awaited by all. The influence that the changed conditions will have on American Pharmacy should be a beneficial one, as the present scarcity of articles that could be made will no doubt stimulate the growth of chemical industries in this country.

Considerable concern has been expressed as to the whereabouts of the German-American apothecaries and their friends who in their trip through Europe reached Bremen on July 13. They were the guests of the Berlin apothecaries on July 15, 16 and 17. (*Apoth.-Ztg.*, 1914, vol. 29, pp. 644–645, 657–658.) An elaborate program had been prepared for their entertainment, one day being spent at the pharmaceutical institute of the University of Berlin at Dahlen. The apothecaries of Vienna, Munich, and several of the other large cities in Germany, Austria, Switzerland, and France had also prepared elaborate programs for entertaining the American pharmacists, but their itinerary has no doubt been interrupted by the general disturbance on the continent.

Friederich Mohr.—On June 21, 1914, there was unveiled in the city of Coblentz, Germany, a monument to one of the pioneers in pharmacy, Friederich Mohr, who despite the fact that he was the author of probably the original text-book on the practice of pharmacy is perhaps more widely known for his connection with the development of analytical chemistry than with that of galenical pharmacy. Pharmacists of an older generation will remember the book "Practical Pharmacy" by Mohr and Redwood, an American edition of which, edited by Wm. Procter, Jr., was in its day generally referred to as Mohr, Redwood and Procter's pharmacy. Friederich Mohr was born in the city of Coblentz in 1806, was a student at Bonn, Berlin, and Heidelberg, a voluminous writer, and is frequently referred to as the classic writer of pharmacy. His text-book of pharmaceutical technic was first published in 1847, his text-book on titration methods in 1855, and a commentary on the first edition of the German Pharmacopœia in 1874. Most of his life was spent in the pharmacy left him by his father and it was not until he reached his sixtieth year that he was called as a professor to Bonn, where he died in 1879.—*Apoth.-Ztg.*, 1914, vol. 29, pp. 547–550.

Before this copy of the JOURNAL reaches its readers the meetings of the National Association of Retail Druggists and the American Pharmaceutical Association will have become history. From present

indications both of these meetings will be interesting, profitable and well attended.

The American Chemical Society's summer or fall meeting, which was to have been held in the city of Montreal, Canada, September 15th to 18th, has been indefinitely postponed because of the European war and the present outlook is that the next meeting of the American Chemical Society will be held in New Orleans, April 1st to 3d, 1915.

U. S. P. Revision.—The fourth and fifth instalments of abstracts of proposed changes with new standards and descriptions for the United States Pharmacopœia, ninth revision, have been published. The first includes proposed proximate assays of crude drugs and galenical preparations and the latter embraces most of the biological products and volatile oils. The material so far published should prove a fruitful source for discussion at the Detroit meeting of the American Pharmaceutical Association.

Official Assay Processes.—Dichgans, H., in concluding a comparative examination of pharmacopœial methods for the assay of potent drugs and medicinal preparations, states that his results indicate that the directions for alkaloidal assay included in many of the pharmacopœias are not at all suited to the purpose. The results obtained are in many instances variable, while in others the methods are so complicated that they are unsuited for general practice. The different methods when applied to the same material give widely variable results, indicating that uniformity in the content of potent drugs can be secured only when the method of assay adopted is uniform.

Total Extractive as a Factor in Fluid Extract Manufacture. (Maines and Gardner.)—The determination of total extractive is an important factor in the manufacture of fluid extracts, especially those of the known alkaloidal drugs. A table of the total extractive determinations is given which represents estimations covering many years of work, and the products of several of the large manufactures. —*J. Am. Pharm. Assoc.*, 1914, vol. 3, pp. 997–1000.

Useful Drugs. (Report of the Board of Trustees.)—The work of the committee on a selected list of drugs has resulted in the publication of the book called "Useful Drugs." This has already been adopted as a text-book by a number of our best schools; its adoption has been considered by the State licensing boards, one already having adopted it, and there is every indication that this enterprise will have a most beneficial effect.—*J. Am. M. Assoc.*, 1914, vol. 63, p. 75.

Prescriptions. (Taylor, George B.)—A report on carelessness in the filling of simple prescriptions in the State of Louisiana. In December, 1913, a prescription calling for 2 gm. of boric acid and 2 ounces of distilled water was filled by 68 New Orleans druggists. Of these, 22, or 32.3 per cent., were correct both as to distilled water and to weight (some allowance is given in weight); 17, or 25 per cent., were correct as to weight but not as to the use of distilled water; 14, or 20.6 per cent., were correct as to distilled water but incorrect in weight; and 15, or 22.1 per cent., were incorrect both as to use of distilled water and as to weight.—*Rep. Louisiana Bd. H.*, 1912, 1913, pp. 176–187.

Weights and Measures.—In an address before the National Conference on Weight and Measures of Washington, D. C., Mr. F. P. Downing, chief inspector of weights and measures for the State of Wisconsin, referred to alleged inaccuracies in the delicate weighing apparatus in drug stores, jewelry stores, and the like. Coin weights used on such scales were stated by him to be often 10 to 30 per cent. light. In a recent inspection of drug stores in Milwaukee 22.1 per cent. of the dispensing scales and 43.6 per cent. of the dispensing weights in use were found in error.—*Pharm. J.*, 1914, vol. 92, p. 905.

Food and Drugs Law.—An important interpretation of the pure food and drugs act was handed down on June 13, by the United States Circuit Court of Appeals at Cincinnati in the case of the United States *vs.* Forty Barrels and Twenty Kegs of coca cola, which reads in part as follows: The general purpose and intent must be deemed to be the prevention of fraud and deception, so that the purchaser can get the thing he has a right to suppose he is getting, rather than the protection of the public health to the extent of preventing the purchaser from deliberately and intentionally buying a particular food which is what it purports to be, even though a jury might think it "deleterious."—*Druggists' Circular*, 1914, vol. 58, p. 487.

The Patent Medicine Business. (News Note.)—Dr. S. S. Goldwater, commissioner of health of New York City, has announced that a systematic investigation of the patent medicine business would be begun at once. It is proposed to insist that the manufacturer of a patent medicine name the ingredients in the mixture and it is believed that public opinion is sufficiently enlightened to support this movement.—*J. Am. M. Assoc.*, 1914, vol. 63, p. 411. See also *Druggists' Circular*, 1914, vol. 58, p. 481.

Patent Medicines. (*Anon.*)—Our Parliamentary correspondent learns that a further prolonged sitting of the Select Committee on Patent and Proprietary Medicines was held on Tuesday at the House of Commons. Sir Henry Norman, the Chairman, again presided. Altogether, the meeting lasted for some hours, and, as the result, about one-half of the draft report has now been disposed of.—*Chem. and Drug.*, 1914, vol. 85, p. 223.

Consumption Cure. (Editorial.)—After a hearing extending over seven days, the libel action against the British Medical Association brought by Mr. C. H. Stevens, the proprietor of "Stevens' Consumption Cure," has terminated in a verdict for the defendants. The jury, after an absence of about 10 minutes, found the matter complained of was of the nature of fair comment and judgment was accordingly given in favor of the British Medical Association.—*Pharm. J.*, 1914, vol. 93, p. 191.

Proprietary Remedies. (Editorial.)—The drug fund of the London Insurance Committee is threatened by the over-prescribing of proprietaries and the drugs and appliances sub-committee of the Insurance Committee has issued a list of articles as not being "proper and sufficient drugs and medicines and prescribed appliances required to be provided for insured persons," under the National Insurance Act.—*Chem. and Drug.*, 1914, vol. 85, p. 221.

National Insurance Pharmacopœia.—"Karshish" suggests the adoption of a national insurance pharmacopœia to avoid unnecessary deficiencies in the drug fund.—*Pharm. J.*, 1914, vol. 93, p. 11.

British Pharmacopœia. (London Letter.)—The work of preparing a new edition of the British Pharmacopœia has now been completed. One of the chief features will be that limits of impurity in drugs and medicinal chemicals—especially dangerous impurity—will be carefully defined. Another feature of the book is an extension of chemical standardization to drugs not at present standardized, but there is no recognition of physiologic standardization. The international unification of the quality of preparations of potent drugs, which has received the endorsement of various nations, has due recognition in the forthcoming book.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 2039.

British Pharmacopœia. (Editorial.)—At its meeting on July 13 the Executive Committee of the General Medical Council formally adopted the completed draft of the British Pharmacopœia, 1914, as submitted by the Pharmacopœia Committee. It was resolved that

copies in advance of publication should be made accessible to the public for inspection at the offices of the Council in London, Edinburgh, and Dublin on Monday, August 10. The official publication of the Pharmacopœia will be made in the *London Gazette* on Friday, October 9, on which day copies will be on sale at the publishers.—*Pharm. J.*, 1914, vol. 93, p. 78.

British Pharmaceutical Conference.—The 51st annual meeting of the British Pharmaceutical Conference was held at Chester, July 20 to 25, 1914, presided over by Edward H. Farr, who chose for the subject of his presidential address a discussion of recent work on plant products. The proceedings are reported at length in the British pharmaceutical journals for July 25, 1914, and the papers presented are published in the journals of the same date. The total number of papers presented was 28, of which 25 were read in the ordinary section and 3 in the practice section. The nature of these communications was well up to the average and should prove to be of interest to all who are in any way engaged in the practical side of their profession.—*Pharm. J.*, 1914, vol. 93, pp. 117–139; also *Chem. and Drug.*, 1914, vol. 85, pp. 161–195.

The papers read in the ordinary section of the British Pharmaceutical Conference included the following:

Estimation of Strychnine in the Presence of Brucine. (Ditt, D. B.)—A modification of Gordon's process is recommended, the experimental data recorded showing that the use of 1 c.c. of concentrated nitric acid for each 0.25 Gm. of brucine in the proportion of 1 to 10 volumes of acid solution, made for a period of 20 minutes at ordinary temperature, is quite sufficient to destroy all the brucine.—*Pharm. J.*, 1914, vol. 93, p. 120.

The Purity of Pepsin Bacteriologically Considered. (Quant Ernest.)—A report on 11 samples of pepsin from various sources, only two of which were free from micro-organisms. The author suggests that the product may be improved by the presence of free acid and the use of chloroform.—*Pharm J.*, 1914, vol. 93, pp. 120, 121.

The Adulteration of Belladonna Leaves. (Allen and Deane.)—The leaves of *Phytolacca decandra, Scopola carniolica,* and *Ailanthus glandulosa* were found admixed with commercial belladonna from Continental sources to the extent of from 20 to 80 per cent. The authors review the literature and present a number of illustrations showing the macroscopic and microscopic features of the

several substitutes compared with the distinguishing features of the genuine drug.—*Pharm. J.*, 1914, vol. 93, pp. 121–123.

The Rate of Dialysis of Alkaloids in Aqueous Solution and in the Form of Galenicals. (Finnemore, H.)—From experiments reported the author concludes that strychnine in aqueous solution diffuses more rapidly than in the form of the liquid extract of nux vomica, and this fact may have some bearing on the therapeutic effect of the two.—*Pharm. J.*, 1914, vol. 93, pp. 123, 124.

The Incompatibility of Strychnine and Nux Vomica with Alkalies, Iodides, and Bromides. (Finnemore and Williamson.)—The most striking feature of the experiments now recorded is the difference in the behavior towards alkalies of strychnine in the form of the solution and that existing in its natural state in admixture or combination with the other ingredients of nux vomica seeds. It appears that, whereas strychnine and alkalies or iodides may become dangerous under varied and indeterminate conditions, when the drug is given in the form of the tincture or the liquid extract no precipitation occurs and no danger need be apprehended, provided the concentration is not greater than that found under normal conditions of prescribing and dosage.

The Analytical Characters of Benzoin. (Cocking and Kettle.)—The alcohol soluble matter in benzoin is not readily determined directly, owing to the volatility of the balsamic constituents, and the easiest way is to obtain it by exhausting the drug by alcohol. A modified method for the determination of the aromatic acid is suggested, and a table showing the composition of a number of the commercial samples of the drug is included with the paper.—*Pharm. J.*, 1914, vol. 93, pp. 125, 126.

The Mineral Constituents of Certain Tinctures and Drugs. (Lewis, S. Judd.)—The molecular structure of chlorophyll is very closely related to hæmatin, the red coloring matter of the blood. The former, under the influence of light, brings about the absorption of carbon dioxide by plants and the elimination of oxygen, and has magnesium as an essential element, hence magnesium is to be anticipated in all mineral matter which has passed through the vegetable cell. The presence of iron is also necessary for the formation of chlorophyll, although it does not enter into the constituents of the pigment. Potassium and calcium are also constantly present, and the occurrence of other metals is frequently more or less accidental. Sodium is widely distributed, while lithium,

aluminum and manganese are rarely encountered. Copper is not rare. Among the non-metals, sulphur and phosphorus are nearly always present in the ashes of plants.—*Pharm. J.*, 1914, vol. 93, pp. 126–128.

The Stability of Cinnamic Aldehyde. (Phillips, H. Adie.)—It has been contended that in the distillation of the oil from chips there was a likelihood that some of the cinnamic aldehyde was oxidized to cinnamic acid. The experiments reported seem to prove that under the usual conditions prevailing under steam distillation cinnamic aldehyde, both pure and as a constituent of cinnamon oil, is not appreciably oxidized.—*Pharm. J.*, 1914, vol. 93, pp. 129, 130.

The Composition of Tinctura Iodi Decolorata. (Pratt, Walter R.)—The finished tincture made according to the directions of the British Pharmaceutical Codex is an alcoholic solution of ammonium iodide, with excess of ammonia containing about 0.1 per cent. iodoform and in some cases ammonium iodate, hydroxylamine, and acetaldehyde.—*Pharm. J.*, 1914, vol. 93, pp. 130, 131.

The Determination of Iron in the Presence of Phosphoric Acid. (Corfield and Pratt.)—The gravimetric determination of ferric iron in the presence of even small quantities of phosphates gave results which are much too high and are variable among themselves. Both the idiometric and reduction by stannous chloride volumetric methods give results which are very accurate and can be equally well used in the presence of phosphoric acid. The former method gives results which tend to be somewhat high.—*Pharm. J.*, 1914, vol. 93, pp. 131–133.

An Improved Method for the Administration of Extractum Filicis Maris Liquidum. (Crossley, Holland F. W.)—Oleoresin of aspidium can best be exhibited in the form of a jelly made with gelatin and glycerin, sweetened with saccharin and flavored with oil of cinnamon. This form of preparation is said to be more palatable than emulsions or capsules, and the bulk is reasonable in relation to the dose.—*Pharm. J.*, 1914, vol. 93, p. 133.

The place of Carbon Disulphide in Official Pharmacy and Suggestion for its Further Use. (Alcock, F. H.)—The use of carbon disulphide is recommended as a solvent for fats and as a means for ascertaining the amount of constituents extractable from official liquid preparations, such as liquid extracts and tinctures. Some useful results have been obtained, a number of which are recorded.—*Pharm. J.*, 1914, vol. 93, pp. 133, 134.

The Composition of the Glycerophosphates of Commerce. (Um-

ney and Bennett.)—Calcium glycerophosphate is of variable composition and does not contain a definite proportion of water. Potassium glycerophosphate is not readily obtainable in a crystalline form, and the crystalline form of sodium glycerophosphate contains 5 molecules of water. Magnesium glycerophosphate is rendered more soluble by the presence of citric acid, and no definite formula for the hydrated salts can be given. Ferric glycerophosphate should contain approximately 15 per cent. of metallic iron and should be completely soluble in two parts of water.—*Pharm. J.*, 1914, vol. 93, pp. 134, 135.

Commercial Standards for Dried Magnesium Sulphate, Sodium Sulphate, and Sodium Phosphate. (Umney and Bennett.)—A reasonable standard for dried magnesium sulphate would be that it should be prepared by drying at 100° until it has lost about one-third of its weight, and that the product should contain not less than 23 per cent. and not more than 31 per cent. of water. It should be completely and readily soluble in water. Sodium sulphate should be practically anhydrous and should not contain more than 5 per cent. of water. For sodium phosphate 5 per cent. of water would be a reasonable limit.—*Pharm. J.*, 1914, vol. 93, pp. 135, 136.

Liquor Opii Sedativus. (Bennett and Cocking.)—Suggestions to improve the formula included in the British Pharmaceutical Codex. The opium should be exhausted by cold maceration in lime water, and the solution should be subsequently but slightly acidified by hydrochloric acid or sulphuric acid, after the addition of alcohol and wine.—*Pharm. J.*, 1914, vol. 93, pp. 136, 137.

Some Uses of a Tincture Press. (Pollard, E. W.)—An illustrated description of possible uses of a tincture press as a pill-piper or as a suppository machine.—*Pharm. J.*, 1914, vol. 93, pp. 137, 138.

Anæsthetic Ether of Commerce. (Finnemore, H.)—An examination of a number of samples of ether in actual use shows that, while some samples may have been rather inferior, in the main they have reached a fair average of purity. The impurities found consist of acetone, water, alcohol, acetaldehyde, peroxides, and acids.—*Pharm. J.*, 1914, vol. 93, pp. 138, 139.

Medical Museum. (*Anon.*)—The Wellcome Historical Medical Museum in London was reopened on May 28, 1914, in a permanent home, 54 A, Wigmore Street, Cavendish Square, London, W. The museum is open daily from 10 A.M. to 6 P.M., Saturdays to 1 P.M. Members of the medical profession and related callings

are admitted on the presentation of their visiting cards.—*Südd. Apoth.-Ztg.*, 1914, vol. 54, p. 403.

The Hague Opium Conference.—The third conference of representatives of the Powers for the purpose of regulating the production and distribution of opium, morphine, and cocaine and their derivatives was held at The Hague, June 23 to 25, 1914. It was concluded to be possible to put the convention into force notwithstanding the fact that some Powers have as yet not signed the convention in compliance with Article 23.—*Oil, Paint and Drug Rep.*, 1914, vol. 86, July 20, p. 18.

Opium Suppression. (Editorial.)—The difficulty of inducing an Oriental nation to do without some narcotic, and the danger of opium smoking being superseded by the still worse habits of cocaine and morphine injection, have long been noted. In the course of a recent trial it was stated that during the past two months about 200 pounds of morphine had been seized by the customs officials at Shanghai.—*Pharm. J.*, 1914, vol. 93, p. 78.

Opium Habit.—In answer to an inquiry the Secretary of State for the Colonies admits that it is the fact that the consumption of fermented liquors, especially beer and stout, had considerably increased in the Malay States since 1909, and the working of the Excise Enactments is being carefully studied with a view to the proper control of this consumption.—*Pharm J.*, 1914, vol. 93, p. 50.

The Harrison Anti-narcotic Bill was finally agreed to by the Senate on the afternoon of Saturday, August 15, in a form that will undoubtedly make it acceptable to members of the House and to the President.

Smoking Opium.—In May last the Commissioner of Internal Revenue made a decision regarding aqueous extract of opium, in which it was stated that, while this product may have some medicinal uses, such uses may be covered by the use of powdered extract of opium; also it is stated that the aqueous extract of opium is used to a considerable extent by opium smokers and is suitable for that purpose. Under the decision, the manufacturers of this product are required to comply with the law as to smoking opium. Taking up this subject, the Treasury Department has issued a decision calling attention to the action of the Commissioner of Internal Revenue, and stating that this product is within the scope of the smoking opium law passed on January 17, 1914, which prohibits the importation of such opium, and the collectors of customs are required to

refuse delivery of aqueous extract of opium and to return the importation to the country whence it came.—*Druggists' Circular,* 1914, vol. 158, p. 487.

Boylan Law. (A News Note.)—After an unavoidable delay in printing them, due to the failure of the State Legislature to make an appropriation therefor, the Boylan law order blanks, which must now be used by all pharmacists, druggists, physicians, dentists, and veterinarians in New York State, when buying opium and chloral, their derivatives and preparations containing the same, are now being distributed.—*Oil, Paint and Drug Rep.,* 1914, vol. 86, July 6, p. 11.

Death by Poisoning in Great Britain.—The 75th annual report of the Registrar-General of Births, Deaths, and Marriages in England and Wales shows that the number of deaths due to poisons and poisonous substances in 1912 was neither materially larger nor smaller than the average for recent years. The number of deaths certified as due to accidental poisoning by scheduled poisons was 122, against 124 in 1911, and by non-scheduled substances 102, against 115 in 1911. The number of cases in which poisons were taken by suicides was 547 (347 scheduled and 200 non-scheduled); in the previous year scheduled poisons were used in 324 cases, and non-scheduled in 195.—*Phar. J.,* 1914, vol. 93, p. 3.

Responsibility for Poisoning. (*Anon.*)—The responsibility for a fatal and an additional serious case of poisoning by impure barium sulphate, used in the course of a Röntgen-ray examination at Prague, has finally been fixed by the upper court at Vienna. This court decided that the pharmacist in charge of the pharmacy was responsible and guilty of neglect because of his having failed to carefully examine the barium sulphate before allowing it to be dispensed or used. The assistants in the pharmacy and in the wholesale drug establishment from which the barium sulphate had been purchased were freed, despite the objection made by the State's Attorney.—*Südd. Apoth.-Ztg.,* 1914, vol. 54, p. 403.

Studies on the Absorption of Drugs. (Hatcher and Eggleston.)—A summary of observations on the absorption of drugs, with the conclusion that the ratio of absorption from the four common channels of administration differs for each drug. No rule can be formulated for the calculation of the appropriate dose by one mode of administration from the dose by any other mode of administration. Such

determination can be made only by experiment.—*J. Am. M. Assoc.*, 1914, vol. 63, pp. 469–473.

Algocratine.—Mannich and Leemhuis, from the pharmaceutical laboratory of the University of Göttingen, report an examination of a powder offered as an infallible remedy for migraine, neuralgia, grippe, influenza, and other diseases. The preparation was found to consist essentially of a mixture of 50 Gm. phenacetin, caffeine 10 Gm., and pyramidon 40 Gm. The claims made for the composition of the preparation were found to be quite untrue.—*Apoth.-Ztg.*, 1914, vol. 29, p. 553.

Antimeningitis Serum. (Auer, John.)—It is an established fact that the administration of antimeningitic serum by intraspinal injection has practically turned the former 70 per cent. mortality from epidemic meningitis into 70 per cent. recoveries. Accumulated experience, however, has apparently shown that the injection of the serum itself may have been the cause of death in a very small number of cases. S. P. Kramer holds that they were caused by trikresol which had been added as a preservative to the serum, a contention which has recently been supported by Hale on the basis of experimental work on dogs and cats.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1799.

Transformation of Barbaloin into Beta-barbaloin. (Léger, E.)—When barbaloin is kept for some time near its melting-point, it becomes converted into its amorphous isomer, beta-barbaloin, which accompanies barbaloin in Cape and Socotrine aloes. The action of acetic anhydride on barbaloin at 100° to 110° also brings about the same change.—(*Compt. rend.*, 1914, vol. 158, p. 1903.) *Pharm. J.*, 1914, vol. 93, p. 83.

Bichloride Tablets. (Vanderkleed and E'we.)—"Bichloride" antiseptic tablet with tartar emetic administered to a dog produced profuse vomiting in seven minutes. During this time, however, a sufficient amount of the bichloride had been absorbed to cause the death of the dog in 6½ hours. This experiment indicates that to be effective the emetic must act more promptly than it did in this instance, as the absorption of bichloride takes place apparently very rapidly.—*Druggists' Circular*, 1914, vol. 58, p. 465.

Calcium Therapy of Tuberculosis. (Kahn, M.)—In looking over the mass of literature relating to the use of calcium in tuberculosis one is left in doubt whether the use of lime in the treatment of tuberculosis is to be recommended. There is, however, no danger

in its use, and, according to the observations of a number of physicians, it is of marked benefit.—(*Med. Rec.*, 1914, vol. 85, No. 21.) *J. Am. M. Assoc.*, 1914, vol. 62, p. 1844.

The Determination of Camphor in Tablets and Pills. (Dowzard, Edwin.)—Camphor may be rapidly and completely removed from tablets and pills by distillation in a current of steam. The watery distillate contains both dissolved and undissolved camphor, which can be extracted with benzol. By determining the optical rotation of the benzol solution the amount of camphor present in the tablets or pills can be readily calculated.—*J. Ind. Eng. Chem.*, 1914, vol. 6, pp. 489–490.

Cerolin (not Creolin as printed in the June issue of this JOURNAL, p. 279) consists of the glycerides of fatty acids along with cholesterins, lecithin, and ethereal oil, all of which are found in yeast. It is prepared by extracting fresh purified beer yeast with alcohol and separating the dissolved fat from the alcoholic extract by suitable means. Cerolin is said to be useful in furunculosis, acne, sycosis, and similar affections of the skin. It is also said to be useful in habitual constipation, leucorrhœa, erosions of the vagina and cervix, and similar diseases.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 931.

Cymarin.—Wiesel considers cymarin a valuable supplement to digitalis because of the rapidity of its action.—*Therap. Monatsh.*, 1914, vol. 28, p. 508.

Eisenzucker. (Anon.)—Eisenzucker, or saccharated ferric oxide, is official in several pharmacopœias, but not in the United States Pharmacopœia. It consists of a ferric hydroxide made soluble by the addition of sugar and a small amount of sodium hydroxide. It is said to be an efficient ferruginous preparation. The adult dose is 0.6 Gm., or 10 grains. This may be dissolved in equal parts of water and syrup.—*J. Am. M. Assoc.*, 1914, vol. 63, p. 421.

Electrargol. (Puckner, W. A.)—Electrargol is a colloidal solution of silver containing a small percentage of sodium arabate. It contains silver equivalent to 0.25 per cent. metallic silver (Ag). Electrargol is an odorless, tasteless liquid, appearing transparent and reddish-brown by transmitted light and opaque and gray by reflected light. The addition of potassium cyanide solution or of strong nitric acid yields a white turbidity on the addition of chlorides—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1808.

Friedmann Remedy.—A number of clinicians and bacteriologists are beginning to report their experiences with the Friedmann remedy.

From the available reports it would appear that this remedy should not be used under any conditions until such time as a sufficient guaranty can be offered that the contaminations and pathogenic organisms present have been eliminated.—*Therap. Monatsh.*, 1914, vol. 28, pp. 509–511. See also *J. Am. M. Assoc.*, 1914, vol. 63, p. 177 and p. 358.

Galegine Sulphate.—The new base recently discovered and isolated by Tanret from *Galega officinalis*, the common goat's rue, is toxic when administered by hypodermic or intravenous injection, both for cold-blooded and warm-blooded animals.—(*Compt. rend.*, 1914, vol. 159, No. 108.) *Pharm. J.*, 1914, vol. 93, p. 195.

Gitalin. (Rosenthaler, L.)—Report of experiments which tend to confirm the assertion made by Kiliani that gitalin is not a definite substance.—*Schweiz. Apoth.-Ztg.*, 1914, vol. 52, pp. 349, 350.

Glyco-Heroin, Smith. (Puckner, W. A.)—The report of the Council on Pharmacy and Chemistry of the American Medical Association on glyco-heroin, Smith, shows it to be a dangerous mixture, containing the habit-forming drug heroin. It is exploited in "patent medicine style," and therefore destined to be misused by the unsuspecting laity.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 1826.

Hydrastinine in Hemorrhages of the Lung. (Röher.)—A review of the use of synthetic hydrastinine in case of pulmonary hemorrhage. The synthetic hydrastinine is said to be identical with the natural substance, and its toxicity is comparable. The results in the five cases reported were uniformly satisfactory.—*Therap. Monatsh.*, 1914, vol. 28, pp. 505, 506.

Idomenin.—A combination of iodine, bismuth, and albumin that is not soluble in dilute acid solutions and is therefore not decomposed in the stomach, but asserts its influence in the intestinal tract in the form of an alkaline iodide and bismuth albuminate.—*Therap. Monatsh.*, 1914, vol. 28, p. 512.

Luminal.—Heinsius suggests that luminal should have established for it an official maximum dose, and that so long as this does not exist simple cases of insomnia should be given from 0.05 Gm. to 0.1 Gm. and not exceeding 0.3 Gm. per dose, this dose to be repeated not more than three times per day, with an interruption of from one to two days after four or five days' treatment.—*Therap. Monatsh.*, 1914, vol. 28, p. 514.

Unusual Case of Fatal Poisoning from the Administration of Male-Fern as a Vermifuge. (Hall, Maurice C.)—Report of a necropsy on a man who had died from an overdose of the oleoresin of

male-fern administered in amounts in excess of the usual dose, administration of which was followed by castor oil.—*J. Am. M. Assoc.*, 1914, vol. 63, pp. 242, 243.

The Use of Maté. (Editorial.)—Attention has recently been drawn, by means of letters to the *Times*, to the use of leaves known as *Yerba maté*, the tea plant of South America. The consensus of opinion seems to be that an infusion of the leaves forms a beverage eminently suited to a hot, debilitating climate, its stimulating effect being no doubt due to the caffeine it contains.—*Pharm. J.*, 1914, vol. 92, p. 870.

Relative Bactericidal Power of Mercuric Salts. (Stassana and Gompel.)—Mercuric iodide is found to be far more active as a bactericide than mercuric chloride, mercuric cyanide, or mercuric benzoate. It is at least ten times more powerful than mercuric chloride, which is generally considered to be one of the most active of all antiseptics.—*Pharm. J.*, 1914, vol. 93, p. 147.

The Abuse of Normal Salt Solution. (Litchfield, Lawrence.)—The administration of any artificial serum as routine postoperative practice is questionable therapeutics. Too much water may fatally embarrass the heart. Too much salt may fatally embarrass the kidneys. When fluids cannot be taken by the mouth, thirst may be relieved by tap-water or by isotonic dextrose solution given by enteroclysis.—*J. Am. M. Assoc.*, 1914, vol. 63, pp. 307–310.

New Technic for Salt Solutions.—Faege, K., outlines a method for the production of sterile salt solution from hydrant water, which depends on the addition of hydrochloric acid to ordinary hydrant water to sterilize it; then add sodium hydroxide in the proper proportion to produce sodium chloride in the desired percentage.—(*Münch. med. Wchnschr.*, vol. 41, June 106, No. 24.) *J. Am. M. Assoc.*, 1914, vol. 63, p. 284.

Liquid Petrolatum. (Puckner, W. A.)—A review of the requirements for liquid petrolatum made in the existing pharmacopœias, some discussion of the history and present uses of the preparation, and descriptions of heavy and light liquid petrolatum, with titles to facilitate the dispensing of the products desired by the physician.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1740–1742. (See this Journal, p. 322.)

The Sterilization of Liquid Paraffin. (Maughan, D.)—From the experiments reported it would appear that the application of heat at a temperature of 100° for half an hour is the most practical method

of rendering liquid paraffin sterile.—*Pharm. J.*, 1914, vol. 93, pp. 81, 82.

Paraffin Cancer. (Davis, Benjamin Franklin.)—Report of a case of cancer in one of the employees in the paraffin department of a large oil refining company located near Chicago, with discussion of coal and paraffin products as causes of chronic irritation and cancer. From a comprehensive review of the literature the author concludes that it would seem fair to assume that the chronic-irritation cancer produced by coal and petroleum products is a chemical-irritation cancer, and that it is not impossible that the cancer following chronic irritation of other origin may be of an essentially similar nature.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1716–1720.

Influence of Diet on the Toxicity of Phosphorus. (Opie and Alford).—The toxicity of phosphorus, which causes fatty degeneration of the liver, is greater in animals which have received a diet of meat than in those which have received diets consisting in large part of carbohydrates or of fat.—*J. Am. M. Assoc.*, 1914, vol. 63, p. 137.

Detection of Picric Acid in Urine.—Among the French troops in Algeria a new form of malingering, by stimulating the symptoms of jaundice by taking picric acid, is not uncommon. To detect this the following reliable test for the acid in the urine has been devised: Five mils of the urine of the suspected case is heated to boiling, with an equal volume of saturated sodium hydroxide solution. Then 1 mil of ammonium sulphide solution is carefully floated on the surface of the liquid. In presence of picric acid, a red ring due to picramic acid will be formed at the zone of contact.—(*Répertoire*, 1914, vol. 26, No. 193.) *Pharm J.*, 1914, vol. 93, p. 195.

Pituitary Extract. (Roth, George B.)—Report of an examination of some commercial preparations made from the posterior lobe of the pituitary body. The relative values of five preparations by the blood-pressure method varied from 1 to 15, and the relative value of six samples by the isolated uterus method from 1 to 7.5. The use of beta-iminazolylethylamin hydrochloride is suggested as a standard for use on the isolated uterus method which is the only one applicable to all preparations.—*J. Am. M. Assoc.*, 1914, vol. 63, pp. 476–479.

Prophylactic Use of Quinine in Malaria. (Carter, H. R.)—The use of quinine in small doses is an efficient method for preventing malarial fever. This method is especially adapted for use in a farming community where it is not practicable economically to get rid of

malarial mosquitoes or to properly screen against them.—*J. Am. M. Assoc.*, 1914, vol. 62, p. 2042.

Quinine in the Treatment of Syphilis. (Breitmenn, M. J.)—The observation that the administration of quinine for the treatment of malaria in patients infected with syphilis was invariably accompanied by marked improvement of secondary and tertiary manifestations of the latter disease led to further experimentation and the use of a mixture of quinine muriate 3, with antipyrin 2, dissolved in from 6 to 8 c.c. of warm water. This mixture, designated chinopyrin, is injected subcutaneously and has given promising results.—*Therap. Monatsh.*, 1914, vol. 28, pp. 504, 505.

Results of Radium in Cancer. (Janeway, H. H.)—A survey of reported results, with the suggestion that a more successful method of applying radium may yet be discovered and that the whole question may reduce itself to the even distribution of the proper dosage throughout all involved tissues. At the present time radium may only supplement but not replace the knife.—*J. Am. M. Assoc.*, 1914, vol. 62, pp. 1707–1709.

Dangers from Radium Treatment of Cancer. (Rovsing, T.)—Tragic experiences in a number of cases lead to the conclusion that radium promotes instead of checks cancer.—*Hospitalstid.*, 1914, vol. 62, N. 27.) *J. Am. M. Assoc.*, 1914, vol. 63, p. 520.

Production of Metallic Uranium. (*Anon.*)—The steady increase in the production of radium at S. Joachimsthal, Austria, has resulted in an overproduction of uranium salts, which up to the present time are used only as coloring for glass and porcelain and have, therefore, but a limited application. Attempts have recently been made to produce metallic uranium by an electrolytic method, and these efforts promise to be successful. Further experiments are being undertaken with a view to utilizing the resulting material in the production of amalgams, more particularly the utilization of metallic uranium in the improvement of steel.—*Pharm. Post.*, 1914, vol. 47, p. 557.

Pharmacological Instability of Scopolamine in Ampoules. (Langer, H.)—To determine the pharmacological activity of scopolamine solutions, recourse was had to its antidotal action on muscarine in the isolated frog's heart. This test is quantitative, and much more reliable than the production of mydriasis in the cat's eye. From tests with the muscarine method, it is found that scopolamine salts kept in ampoules soon deteriorate, losing their specific action. Solutions of scopolamine for therapeutic use, therefore, should be freshly pre-

pared, and the employment of those in sterilized ampoules avoided as far as possible.—*Pharm. J.*, 1914, vol. 93, p. 147.

Recordin.—Mannich and Leemhuis, from the pharmaceutical laboratory of the University of Göttingen, report the examination of a preparation marketed as a prophylactic for the ills of old age, including arteriosclerosis. The analysis showed the substance to consist largely of sodium chloride, with negligible quantities of phosphates, sulphates, carbonates, and tartrates of calcium, magnesium, and sodium. As diluents bolus and starch were used.—*Apoth.-Ztg.*, 1914, vol. 29, p. 628.

Rhubarb. (Rosenthaler, L.)—A review of some of the available literature relating to the drying of rhubarb, from which the author concludes that this drug is always dried spontaneously, either out of doors or suspended in houses. The absence of gelatinized starch in the root indicates that higher temperatures are never used.—*Schweiz. Apoth.-Ztg.*, 1914, vol. 52, pp. 405, 406.

The Control of Saccharin and Analogous Substances.—The sovereigns and heads of the Governments of Germany, Belgium, Greece, France, Italy, the Netherlands, Portugal, and Russia, desiring to regulate the use of saccharin and allied substances, have agreed on articles describing the substances referred to, and have undertaken to prohibit the use of saccharin and other allied products in all beverages and foodstuffs.—*Perf. and Ess. Oil Rec.*, 1914, vol. 5, pp. 288, 289.

Scillitin, the Toxic Principle of Squill.—Kopaczewski, W., says he has isolated the toxic principle of squill in the form of an amorphous glucoside, $C_{17}H_{25}O_6$, to which the name scillitin is given. It is a very light, non-hygroscopic, intensely bitter powder. It is soluble in the saturated alcohols of the fatty series; sparingly soluble in water, and insoluble in ordinary organic liquids. It melts at 152° to 154°.—*Pharm. J.*, 1914, vol. 92, p. 879.

Sennatin. (Lindbom, Oskar.)—The intramuscular injection of sennatin produces, in the majority of cases of constipation, copious stools, with subjective and sensible peristaltic movements of the intestine. As an occasional complication marked increase in temperature was noted.—*Therap. Monatsh.*, 1914, vol. 28, p. 509.

The Tablet Industry, its Evolution and Present Status, the Composition of Tablets and Methods of Analysis. (Kebler, L. F.)—Historical review, with a report on the examination of a number of samples showing considerable variation in the nature of the tablets examined.—*J. Am. Pharm. Assoc.*, 1914, vol. 3, pp. 820–848, 937–958, 1062–1099.

Compressed Tablets. (Rohn, R.)—For the production of compressed tablets that will readily disintegrate, the addition of from 10 to 20 per cent. of magnesium peroxide is suggested. Tablets with this addition, when moistened with water, will disintegrate almost immediately.—*Südd. Apoth.-Ztg.*, 1914, vol. 54, p. 398.

Urease. (Puckner, W. A.)—Urease is a preparation of the urea-lytic enzyme obtained from the soy bean, *Soja hispida.* It decomposes urea into ammonia and carbon dioxide, and it may be employed in the determination of the amount of urea in the urine, blood, and other body fluids. Urease is now being marketed by several firms as a fine, white powder with little taste or odor. It is soluble in slightly alkaline water, and represents the urea-converting enzyme of soy bean in a condition of high potency. It is practically free of the water-soluble proteins which are precipitated by hydrochloric acid, and of proteins that are insoluble in water.—*J. Am. M. Assoc.*, 1914, vol. 63, p. 165.

Urotropin.—Simon reports six cases in which hæmaturia followed the administration of fairly large doses of urotropin. In rabbits hæmaturia could be produced only by the administration of very large doses: 8 Gm. per day.—*Therap. Monatsh.*, 1914, vol. 28, p. 544.

Uteramin.—Uteramin is a new name applied to paraoxyphenylethylamine, formerly sold under the name systogen.—*Therap. Monatsh.*, 1914, vol. 28, p. 511.

Wassermann Reaction in Tuberculosis. (Letulle and others.)—It was found that 19 per cent. of 346 tuberculosis inmates of the Boucicaut Hospital gave a positive response to the Wassermann test. Only ten of the total of 64 reacting were aware of their syphilitic taint or had signs of it. Fourteen of the patients, including eight under 36, had some aorta affection.—*Bull. Acad. Méd.*, 1914, vol. 8, No. 4.) *J. Am. M. Assoc.*, 1914, vol. 62, p. 1848.

NEWS ITEM.

The National Association of Retail Druggists ended in Philadelphia on August 21 the largest convention of druggists ever held in this country. Fully 1500 delegates, representing 20,000 members of the association, were present. The following officers were elected: President, Samuel C. Henry; Vice Presidents, A. S. Ludwig, W. H. Humphreys and T. C. Coltman; Secretary, Thomas H. Potts; Treasurer, Grant W. Stevens; Executive Committee, James F. Finnerman, Robert J. Frick and T. S. Armstrong.